



## NextGEN

# Fixing the Skies for the Next Gen

By June L. Kim, Associate Editor

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**The Federal Aviation Administration is working to modernize the nation's airspace.**

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**F**or more than a decade, the Federal Aviation Administration has been working to restructure the airspace over the US. One way the FAA is doing that is through the Next Generation Air Transportation System, or, for short, NextGen. It is a major overhaul of the national airspace infrastructure aiming to modernize and simplify the current system, said Edward L. Bolton Jr., the assistant administrator for NextGen at the FAA.

The United States has the world's largest controlled airspace of five million square miles—and it is the most diverse, most complex, and safest. Yet, with the current aging system, a rising number of passengers, and other factors, the US aviation industry has been looking to find ways to modernize the airspace for quite some time, said Bolton, a retired Air Force major general, at the Air Force Association's Air & Space Conference in National Harbor, Md., in September.

NextGen is a series of programs intended to increase airport efficiency, reduce flight delays, shorten flight paths, improve airport arrival rates, enhance controller productivity, increase safety, and reduce fuel costs, according to the "NextGen

Priorities Joint Implementation Plan," an FAA report issued to Congress in 2014.

The NextGen concept was first envisioned in 2003 and an advisory committee, made up of FAA officials and members of the aviation industry, was later established to develop and implement a number of priorities for the new system. The NextGen advisory committee (NAC) came up with four focus areas: multiple runway operations, performance-based navigation, surface and data sharing, and data communications.

### FIRST STEPS

According to the FAA, multiple runway operations focus on improving runway access through new and improved technology, updated standards, analysis, and modifications.

Performance-based navigation uses satellite-based area navigation and required navigation performance "to improve access and flexibility for point-to-point operations."

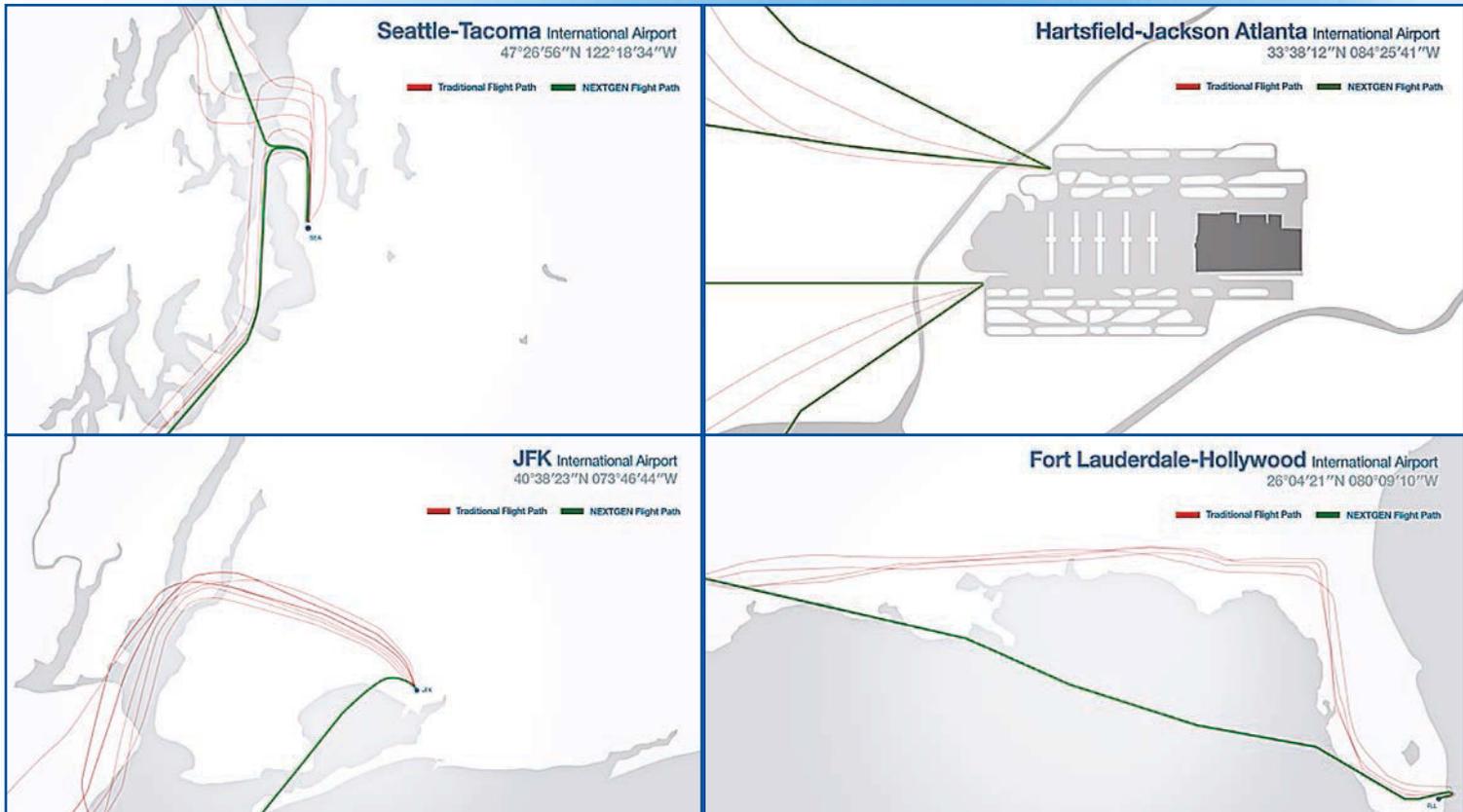
Surface and data sharing focuses on airport surveillance information, automation, and enhanced cockpit displays that would "provide increased situational awareness for controllers and pilots," states the FAA.

Finally, data communications uses messaging services, similar to texting, "to deliver clearances, coordinates, and commands."

Although it superficially sounds like a routine technological refresh of the sort government agencies perform all the time, in reality NextGen "is the most complex and difficult modernization project since the [interstate highway system]" in the 1950s, said Bolton during a panel discussion on the national airspace structure.

Since last year, NextGen has been implementing the first steps in airports all around the country. Pathfinder NextGen locations include airports serving Atlanta, Chicago, Cincinnati, Detroit, Houston, Los Angeles, Philadelphia, and New York City. In these first steps, the NAC was able to implement 28 "milestones of actual capabilities"—items that were important to stakeholders, said Bolton.

In Atlanta alone, Delta Air Lines saved some \$14 to \$19 million in a year through a NextGen initiative called the Wake Turbulence Recategorization, which safely decreased the distance between aircraft taking off. That increased capacity and



efficiency, leading to fewer delays, shorter takeoff times, less fuel burn, and a reduction in the aviation carbon footprint, according to the FAA website.

Having just completed the first phase of NextGen, the system still has a long way to go but is on track for initial operating capability in 2025, said Bolton.

So far, so good, but there are no guarantees NextGen will stay on track for long, said Paul Rinaldi, president of National Air Traffic Controllers Association. There are many external factors looming over its implementation, such

as the threat of a return to sequestration and the need for Congress to pass an FAA reauthorization bill.

### DRONE WARNING

The FAA must also find a way to safely integrate unmanned aircraft into the nation's airspace, urged Rinaldi. NextGen does not entirely prepare the FAA or the nation for the rapidly expanding presence of remotely piloted aircraft. "We didn't understand the magnitude to which [remotely piloted aircraft] would be an oncoming tidal wave, something

**Screenshots from an FAA video show traditional flight paths in red, and NextGen's suggested flight paths in green. More efficient flight paths save both time and money.**

that must be dealt with, and quickly," Bolton said in 2014.

Commercial drones have had several close-calls with airplanes in metropolitan areas, and this growing threat "is probably one of the biggest challenges" in airspace, said Rinaldi. He also alluded to the giant online store Amazon.com, which in 2013 announced it is doing research and development in anticipation of launching drones to deliver packages in as little as 30 minutes after customer purchase.

"That's a recipe for disaster," said Rinaldi.

The military has also demonstrated an exponentially increasing use of RPAs over the past two decades, with much more growth still likely to come. According to Paul Scharre, senior fellow at the Center for a New American Strategy and director of the 20YY Warfare Initiative, also speaking at AFA's conference, RPAs will increase the military's precision, reliability, speed, and significantly reduce costs compared to manned aircraft alternatives.

The FAA has a "tremendous challenge" ahead in managing the nation's airspace, Bolton said, and the demands on the space are only expected to continue to evolve and grow.



**Edward Bolton, FAA assistant administrator for NextGen, speaks in a panel discussion on reinventing the national airspace structure at the Air Force Association's 2015 Air & Space Conference on Sept. 15.**